

CR-80-SS

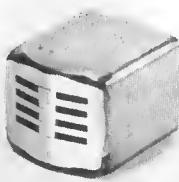
OPERATOR'S MANUAL SURROUND STEREO CARTRIDGE TAPE RECORDER



This manual is also applicable to Model CR-80D-SS Surround Stereo Cartridge Tape Deck.

AKAI

MANUFACTURED & DISTRIBUTED BY AKAI ELECTRIC CO., LTD./AKAI TRADING CO., LTD.



ONE-MICRON GAP HEAD

AKAI's one-micron gap head is responsible for an amazingly important difference in tape recording. It's the difference between ordinary performance and the highest possible quality perfection.

Just what is a one-micron gap head? It's a head with a width of only one astounding micron. Until now two or four micron gap heads have been the standards for comparing tape recorders. However, AKAI has pushed ahead and narrowed the head gap; thus narrowing the difference between tape recording results and actual sound.

The AKAI perfected one-micron gap head has these distinctive advantages over heads with wider gaps:

- (A) Excellent frequency response even at low tape speed.
- (B) Clear, high pitched sound can be regenerated as a frequency tone and recorded smoothly with a minimum of distortion.

TABLE OF CONTENTS

Specifications	1
Controls	2
Voltage and Cycle Conversion	4
DIN JACKS	5
4-CH/2-CH Stereo Selector	5
Track Selector	5
Remote Control	5
8-Track 2-channel Stereo	6
8-Track 4-Channel Stereo	6
AKAI Surround Stereo	6
Precautions	7
Playback	
4-Channel Surround Stereo	8
2-Channel Stereo	9
Automatic Stop/Continuous Play	9
Fast Forward	9
Playback Using Stereo Headphones	9

Recording	
4-Channel Surround Stereo	10
2-Channel Stereo	10
Recording from other External Sources	
4-Channel Surround Stereo	11
2-Channel Stereo	11
From a record player	11
From another Tape Recorder	11
Input Selector Switch	11
Monitoring	12
P.A. System	12
Tape Erasing	13
Head Cleaning	13
CR-80D-SS Playback	
4-Channel Surround Stereo	14
2-Channel Stereo	14
Standard Accessories	15
Optional Accessories	15

SPECIFICATIONS CR-80-SS (CR-80D-SS)

Track System 8-track 4-channel/2-channel compatible stereo
Tape Speed 3-3/4 ips
Wow/Flutter Less than 0.25% RMS
Equalization Correct equalization for playback of tapes recorded to NAB curve
Frequency Response..... 30 to 16,000 Hz (± 3 dB)
Distortion..... Less than 2% (1000 Hz "O" VU)
Output Power Total music power 40W (10W each channel)
(CR-80-SS only) at 8 Ω
 Continuous power 28W (7W each channel)
 at 8 Ω
Signal to Noise Ratio Better than 47 dB
Erase Ratio Better than 60 dB
Bias Frequency 60 kHz
Heads 8-track 4-channel stereo Recording/
 Playback head, 8-track 4-channel Erase Head
Motor 2-speed induction motor
Fast Forward Time 230 seconds using a 300 ft. cartridge tape
(approx. 15 ips)

Recording Capacity 30/60 min. 4-ch/2-ch stereo using a 300 ft. cartridge tape
Output Jacks Line (4): 1.23V ("O" VU)/100 Ω (Required load impedance: more than 20 k Ω)
 Phone (1): 30 mV/8 Ω (Selector Switch for front and rear channels)
 Speaker (4): 10W/8 Ω (CR-80-SS only)
Input Jacks Mic (4): 0.5 mV/5 k Ω
 Line (4): 50 mV/150 k Ω
DIN Jacks (2): 0.4V/10 mV (front and rear channels)
Semi-Conductors Transistors: 19
 Diodes: 19
Integrated Circuits Linear: 4
 Power: 4 (CR-80-SS only)
Power Source 100V to 240V AC, 50/60 Hz
Power Consumption 75W (CR-80-SS)/50W (CR-80D-SS)
Dimensions 485(W) x 138(H) x 280(D)mm (19.4 x 5.5 x 11.2")
Weight 12 kg. (26 lbs.), (CR-80D-SS: 11 kg. (24 lbs.))

CONTROLS

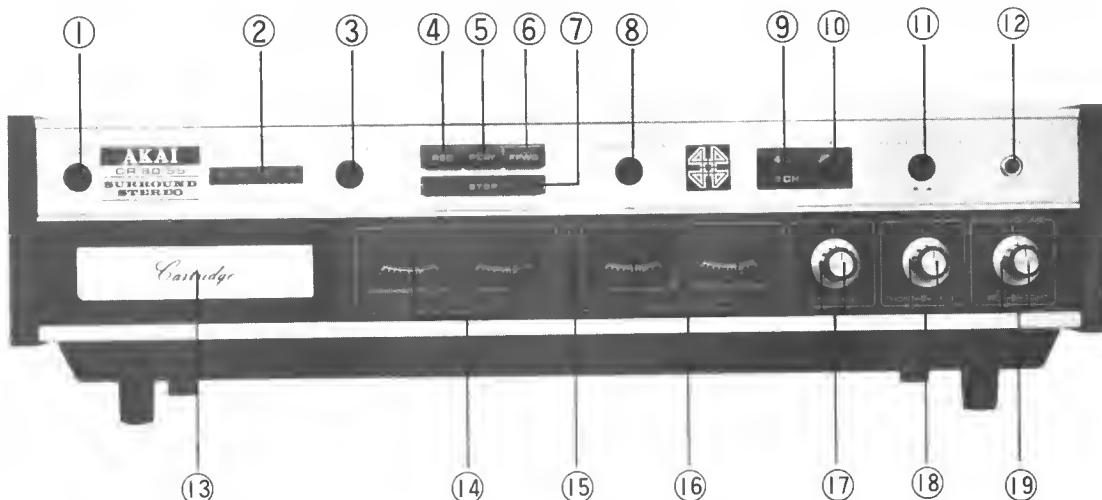


Fig. 1

1. POWER SWITCH
2. PROGRAM INDICATOR LAMP
Shows which program is being played.
3. TRACK SELECTOR
For selection of desired tracks.
4. RECORD BUTTON
For recording mode, depress RECORD BUTTON and PLAY BUTTON simultaneously.
5. PLAY BUTTON
Advances tape for recording/playback mode.
6. FAST FORWARD BUTTON
Advances tape at high speed (fast program selection).
7. STOP BUTTON
8. CONTINUOUS PLAY SWITCH
Depress for continuous playback.
9. 4-CH 2-CH STEREO INDICATOR LAMP
Indicates 4-channel or 2-channel operation.
10. 4-CH 2-CH STEREO SELECTOR
11. PHONE SELECTOR
For selection of front or rear channel listening.
12. PHONE JACK
13. CARTRIDGE RECEPTACLE
14. FRONT CHANNEL (LEFT/RIGHT) VU METERS
Indicates front channel recording/playback levels.
15. RECORDING INDICATOR LAMP
Lights during recording mode.
16. REAR CHANNEL (LEFT/RIGHT) VU METERS
Indicates rear channel recording/playback levels.
17. FRONT CHANNEL (LEFT/RIGHT) VOLUME CONTROLS
Playback: Front channel speaker volume control.
Recording: Front channel recording level control (adjust while observing Front Channel VU Meters).
18. TONE CONTROLS (CR-80-SS only)
Front and Rear channel tone control
19. REAR CHANNEL (LEFT/RIGHT) VOLUME CONTROLS
Playback: Rear Channel speaker volume controls.
Recording: Rear Channel recording level control (adjust while observing Rear Channel VU Meters).

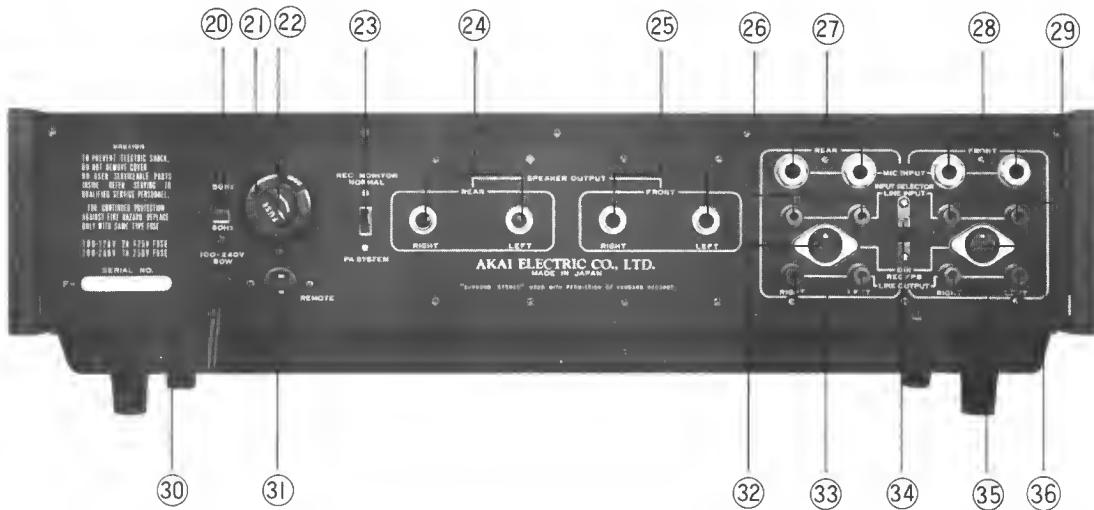


Fig. 2

20. CYCLE CONVERSION SWITCH (A)

Set this switch and Cycle Conversion Switch (B) located on bottom of recorder for 50 or 60 Hz operation according to area power source.

21. VOLTAGE SELECTOR

Universal Voltage Selector (100 to 240V AC). Set according to area voltage.

22. FUSE POST

When changing voltage, it is also necessary to change the fuse accordingly.

100 to 120V : 2A, 125V Fuse

200 to 240V : 1A, 250V Fuse

23. MODE SWITCH (CR-80-SS only)

Set to "P.A. System" position for Public Address ONLY. Leave at upper position for all other operations.

24. REAR CHANNEL (LEFT/RIGHT) SPEAKER JACKS (CR-80-SS only)

25. FRONT CHANNEL (LEFT/RIGHT) SPEAKER JACKS (CR-80-SS only)

26. REAR CHANNEL (LEFT/RIGHT) INPUT JACKS

27. REAR CHANNEL (LEFT/RIGHT) MICROPHONE JACKS

28. FRONT CHANNEL (LEFT/RIGHT) MICROPHONE JACKS

29. FRONT CHANNEL (LEFT/RIGHT) INPUT JACKS

30. AC CORD

31. REMOTE CONTROL JACK

For remote control of Track Selector Switch, connect to AKAI ARC-18 remote control unit (optional accessory).

32. REAR CHANNEL DIN JACK

33. REAR CHANNEL (LEFT/RIGHT) OUTPUT JACKS

34. INPUT SELECTOR SWITCH

Set to DIN (lower) position when using DIN Jack, and to LINE INPUT (upper position) when using Line Input Jacks.

35. FRONT CHANNEL (LEFT/RIGHT) OUTPUT JACKS

36. FRONT CHANNEL DIN JACK



Fig. 3



Fig. 4

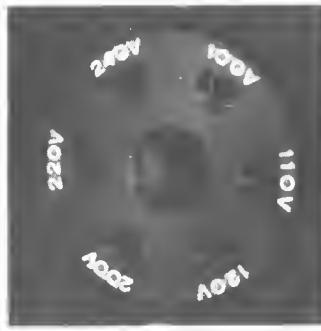


Fig. 5



Fig. 6

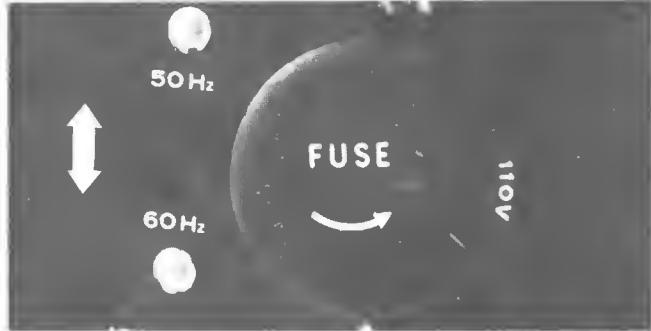


Fig. 7

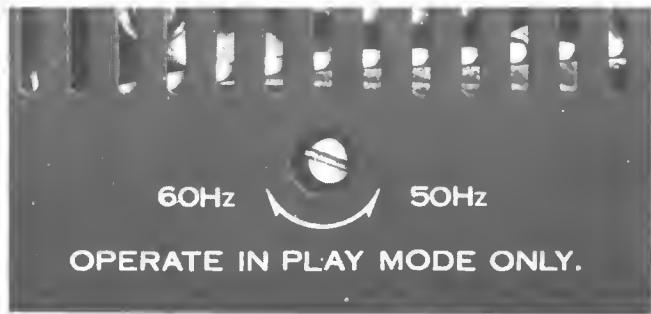


Fig. 8

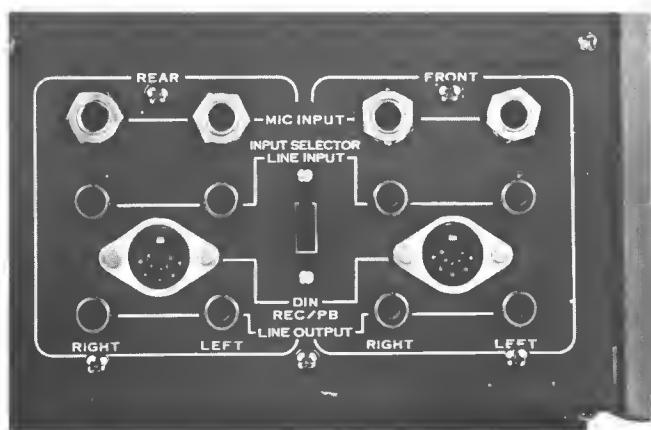


Fig. 9

VOLTAGE AND CYCLE CONVERSION

VOLTAGE

With the built-in stepdown power transformer, Model CR-80-SS (CR-80D-SS) is operable anywhere in the world. The operator can easily readjust the recorder to any one of the six stages of power voltage from 100 to 240 volts AC. The operator is requested to check the recorder to determine the previously set voltage before operation.

If another voltage is required, readjustment can be made as follows:

- (1) Remove the FUSE POST as shown in Fig. 3. Remove the VOLTAGE SELECTOR PLUG and reinsert to desired voltage.
- (2) Change the fuse according to voltage. Fuse: 100 V-120 V 2 A; 200 V-240 V 1 A

CAUTION: Disconnect power plug from AC outlet before readjusting voltage. To maintain optimum performance and prolong the life of your machine, it is important that the line voltage be held within a 10 percent deviation of standard area voltage.

CYCLE

Correct tape speed cannot be obtained if the CYCLE CONVERSION SWITCHES are not properly positioned. CYCLE CONVERSION SWITCH (A) is located on the rear panel and CYCLE CONVERSION SWITCH (B) is located on the bottom of the recorder. Set CONVERSION SWITCH (A) to correspond with area voltage. With a screw driver, set CONVERSION SWITCH (B) accordingly. For 60 cycles, turn screw clockwise. For 50 cycles, turn screw counter-clockwise. Caution: Operate CYCLE CONVERSION SWITCHES only when recorder is in PLAY MODE.

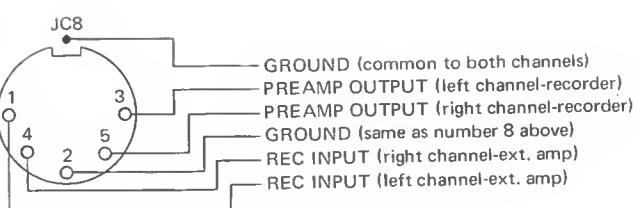


Fig. 10



Fig. 11



Fig. 12

DIN JACKS

The DIN JACKS at the rear of the recorder are for use in inter-connecting Model CR-80-SS (CR-80D-SS) with an external stereo amplifier. This system enables easy recording and playback through an external amplifier as the complex connection and disconnection of several separate plugs is not necessary. If your amplifier is not equipped with a DIN Jack, AKAI connection Cord DR-110 (optional accessory) can be used. (An AKAI DR-111 Connection Cord has been included in the standard accessories of Model CR-80D-SS).

Caution: When using DIN Jacks, Input Selector Switch must be set to "DIN" position.

4-CH/2-CH STEREO SELECTOR

The CR-80-SS (CR-80D-SS) utilizes a unique change-over system from 4-channel to 2-channel stereo or vice-versa. When a tape is loaded, the unit is automatically switched for 2 or 4-channel operation depending upon the tape and the Stereo Selector Indicator Lamp lights accordingly. Note that when a 2-channel tape is inserted into the cartridge receptacle, only the two front channels are set for operation and the "2-CH" lamp lights. When a 4-channel tape is inserted, all 4-channels are set for 4-channel operation and the "4-CH" lamp lights. In case 4-channel operation is desired with a 2-channel tape, depress the Stereo Selector Button for change-over to 4-channel operation.

TRACK SELECTOR

The Model CR-80-SS (CR-80D-SS) employs an 8-track cartridge stereo system. The tape has a total of 8 tracks, 2 or 4 of which are used at a time for 2 or 4 channel operation. The Track Selector indicates four 2-track stereo channels. However, in the case of 4-channel operation, because 4 tracks are used simultaneously, only program channels 1 and 2 are utilized. Operate Program Selector Button for program selection.

REMOTE CONTROL

The Program Selector can be remote controlled by using AKAI Remote Control unit ARC-18. Plug into remote control jack on rear panel of recorder.



Fig. 13

8-Track 2-Channel Stereo Tape

1	Left 1
2	Left 2
3	Left 3
4	Left 4
5	Right 1
6	Right 2
7	Right 3
8	Right 4

Fig. 14

**8-Track 4-Channel Stereo Tape**

1	Front Left
2	Front Left
3	Rear Left
4	Rear Left
5	Front Right
6	Front Right
7	Rear Right
8	Rear Right

Fig. 15

8-Track 2-Channel Stereo

For 2-channel stereo operation, two of the 8 tracks are utilized at a time. Recording/Playback track sequence is 1-5, 2-6, 3-7, 4-8. When recording/playback on tracks 1-5 terminates, the second channel (tracks 3-7) is automatically positioned for continued operation, etc. until 4 programs have been recorded or played back.

8-Track 4-Channel Stereo

For 4-channel stereo operation, four of the 8 tracks are utilized at a time. Recording/Playback track sequence is 1-3-5-7, and 2-4-6-8. When recording/playback on tracks 1-3-5-7 terminates, the second channel (tracks 2-4-6-8) is automatically positioned for continued operation. Because 4 tracks are used simultaneously for 4-channel operation, only 2 programs are recorded or played back on a single tape.

AKAI SURROUND STEREO

Just as 2-channel stereo sound reproduction meant the exodus of flat monaural sound, so does AKAI's epoch making SURROUND STEREO eliminate the inability to pick up and reproduce pure concert hall sound.

The CR-80-SS is equipped with 4 speaker jacks and a built-in 4-channel amplifier (The CR-80D-SS is a 4-channel surround stereo tape deck. For playback, a 4-channel external stereo amplifier (or two 2-channel stereo amplifiers) and 2 sets of speakers are required). For SURROUND STEREO, this new 4-channel cartridge stereo system uses 4 signal paths (4 sound tracks) in the program material and for playback, 4 speakers are positioned to surround the listener. Each speaker delivers separate sound depending upon microphone placement during recording and provides the listener with a realistic "SENSE OF PRESENCE". This 4-dimensional sound reproduction makes ordinary stereo seem insufficient.

This move-up to Surround Stereo, though a real step forward in the recording world, does not mean, however, that your 2-channel recordings are obsolete. The CR-80-SS (CR-80D-SS) is compatible with 2-channel stereo as well. A unique change-over system is utilized to automatically set recorder (deck) for 2 or 4 channel operation depending upon the tape being used.

PRECAUTIONS

Model CR-80-SS (CR-80D-SS) is constructed of the finest materials and with proper care will bring you many, many hours of musical listening pleasure. We, therefore, strongly urge you to read this manual thoroughly before attempting operation.

The conditions listed below do not indicate mechanical failure of your unit. If your machine exhibits any of these conditions, please take the indicated action:

1. Loss of sensitivity and tone quality
 - * Dirty Erase Head (Clean erase head)
 - * Dust adhering to recording/playback head (Clean recording/playback head)
 - * AC power lower than the voltage to which your machine is adjusted (Check voltage input and adjust).
2. Machine will not record (play)
 - * Check positions of controls and plugs and position of Input Selector Switch.

The following notes are provided for your convenience:

- 1) The use of new tapes will result in the best recordings.
- 2) Should your machine need service, take it to your nearest authorized AKAI Service Agent or inquire at the Service Department of AKAI Company, Tokyo Japan.
- 3) Your machine needs constant voltage for optimum performance.
- 4) In recording, if the sound sources are so far away from the microphones that the volume controls must be turned up to maximum, some hum or noise will inevitably be recorded. A test recording is recommended before attempting a final recording.
- 5) Insert cartridge properly (if up-side-down your recorder will not operate).
- 6) Although the motor of Model CR-80-SS (CR-80D-SS) is sufficiently oiled for prolonged use, for maximum service and optimum performance, take your machine to your local authorized AKAI service agent for occasional lubrication.

PLAYBACK

(For Model CR-80D-SS operation refer to page 14.)
Model CR-80-SS is equipped with a 4-channel built-in power amplifier. Therefore, 4 speakers are all that is needed for 4-channel playback.

For 4-channel surround stereo operation, connect 4 speakers to speaker jacks and position to form the "2-2 system" as shown in Fig. 16.

For 2-channel operation, connect 2 speakers to the front channel speaker jacks as shown in Fig. 18.

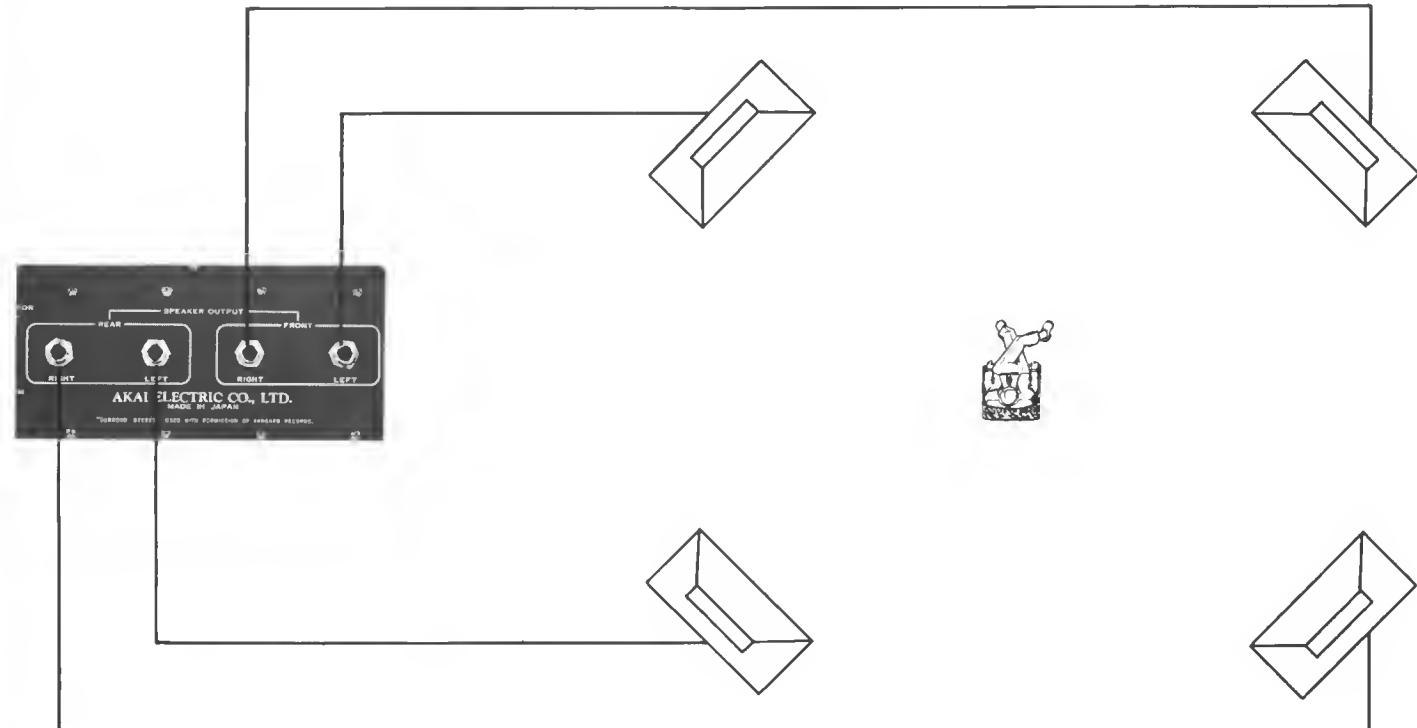


Fig. 16

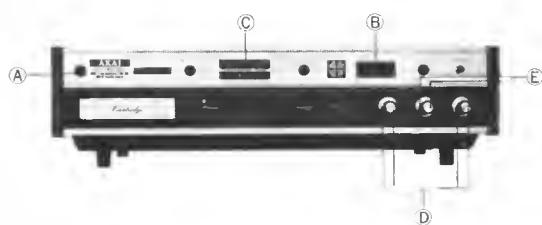


Fig. 17

4-Channel Surround Stereo

- Ⓐ Turn on Power Switch
- Ⓑ Load a 4-channel pre-recorded tape (Stereo Selector will indicate "4-CH" operation).
- Ⓒ Depress Play Button.
- Ⓓ Adjust front and rear channel Volume Controls.
- Ⓔ Adjust Tone Controls.

Note:

The Program Indicator will show which track is being played. Operate Program Selector Button to change program. For 4-channel playback, only program 1 and 2 Indicator Lamps will operate. At the end of program 2, the Program Indicator will return to program 1.

2-Channel Stereo

For 2-channel stereo, only the front channels are utilized. Substitute the following steps for Steps ③④ and ⑤ of the Surround Stereo procedure:

- ③ Load a 2-channel pre-recorded tape (Stereo Selector will indicate "2-CH" operation).
- ④ Adjust Front Channel Volume Controls
- ⑤ Adjust Front Channel Tone Control.

Note:

The Program Indicator will show which track is being played. Operate Program Selector to change program. At the end of each program, subsequent tracks are automatically set for continued playback.

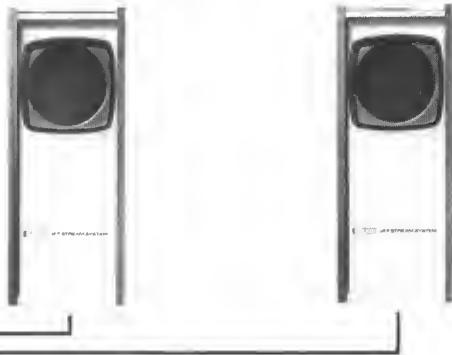


Fig. 18



Fig. 19

AUTOMATIC STOP/CONTINUOUS PLAY

One of the features of the Model CR-80-SS (CR-80D-SS) is the Automatic Stop function of the unit. At the end of Program 2 (4-channel) or Program 4 (2-channel), the tape will stop automatically. If continuous play is desired, depress Continuous Play Switch.

When the Continuous Play Switch is depressed, the tape will be played over and over until the recorder is turned off.

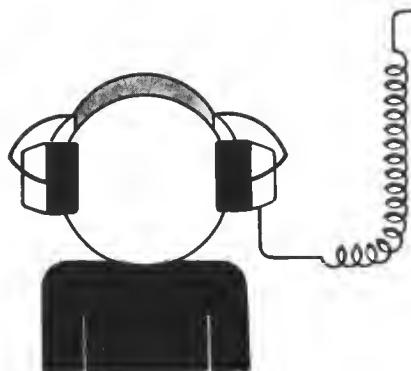
Note: Continuous Play is operable only in Play Mode.

FAST FORWARD (F. FWD)

The CR-80-SS (CR-80D-SS) is equipped with a F. FWD Button for your convenience. This feature enables rapid selection of your favorite tunes.



Fig. 20



PLAYBACK USING STEREO HEADPHONES

For private listening, connect Stereo Headphones to Stereo Headphone Jack. Operate Phone Selector for front or rear channel listening. (Front Channel: OUT position; Rear Channel: IN position).

RECORDING

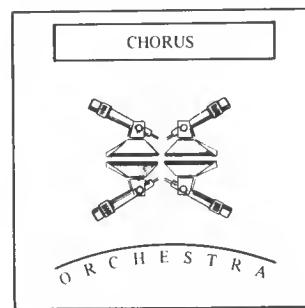
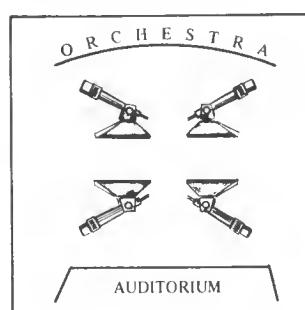
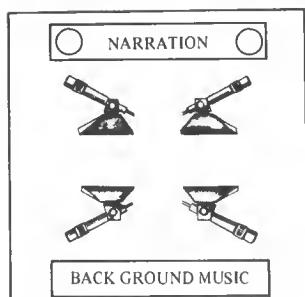
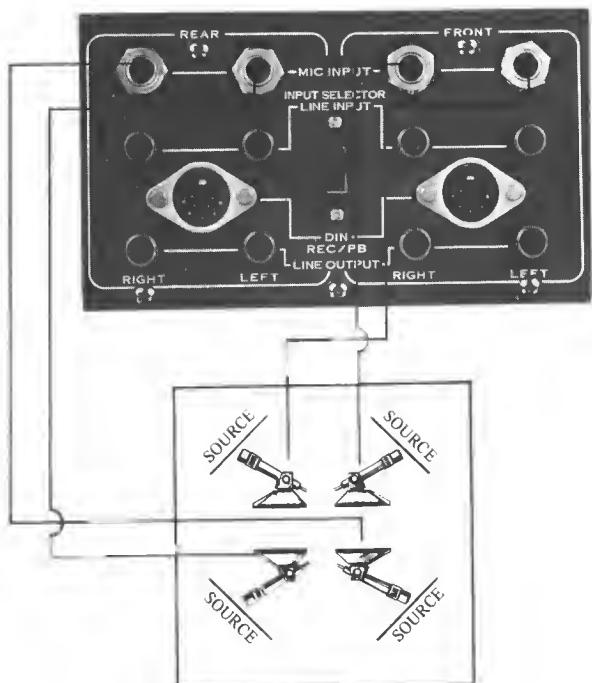
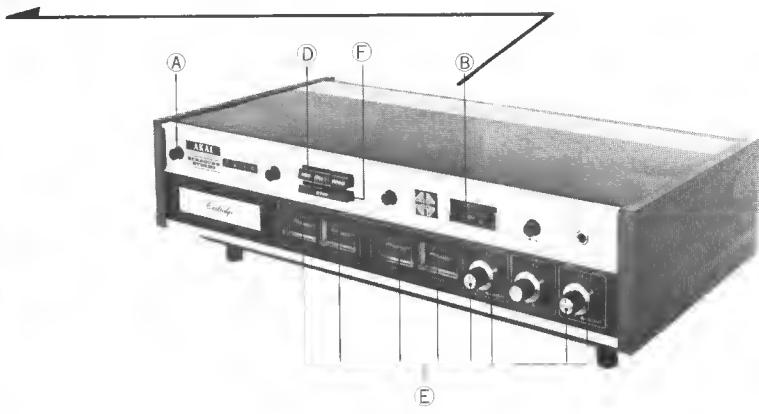


Fig. 21



4-Channel Surround Stereo

- (A) Turn on Power Switch
- (B) Load a 4-channel tape (If an ordinary 2-channel tape is used, depress Stereo Selector Switch for 4-channel operation.
- (C) Insert Microphone Plugs into Microphone Jacks (Left and Right Front and Rear)
- (D) Depress Rec Button.
- (E) With Volume Controls, adjust and balance recording level while observing VU Meters. (Normal recording should not exceed "O" VU on any of the respective meters).
- (F) When an optimum recording level has been determined, depress Stop Button and then depress Rec. and Play Buttons simultaneously to begin recording. (Recording Indicator Lamp will light when recording mode is effected).

Notes:

1. Tone Controls of CR-80-SS have no effect during recording mode.
2. The Program Selector should be set to channel 1 before initiating recording operation.
3. Upon completion of recording of Program 2, the tape will return to Program 1 and stop automatically. Recording time is 15 minutes per channel (30 minutes for 4-channel surround stereo using a 300 ft. cartridge tape).
4. For optimum performance, only quality tapes should be used. AKAI Cartridge Tapes ACT-200 (200 ft.) and ACT-300 (300 ft.) are highly recommended.

2-Channel Stereo

For 2-channel stereo recording, substitute the following Steps for Steps (B) (C) and (E) of Surround Stereo recording procedure:

- (B) Load a 2-channel tape.
- (C) Insert Microphone Plugs into Left and Right Front Channel Microphone Jacks.
- (E) With Front Channel Volume Controls, adjust and balance recording level while observing Front Channel VU Meters.

Note:

Upon completion of recording of Program 4, the tape will return to Program 1 and stop automatically. Recording time is 15 minutes per channel (1 hour using a 300 ft. cartridge tape).

RECORDING FROM OTHER EXTERNAL SOURCES

4-Channel Surround Stereo

For 4-channel stereo recording, connect the front and rear channel line inputs to front and rear channel line outputs of external source instead of Step C of 4-channel Surround Stereo Recording procedure.

2-Channel Stereo

(From an External Amplifier)

Connect the Line Outputs of external amplifier or tuner amplifier to the front channel Line Inputs instead of Step C of 2-Channel Stereo recording procedure.

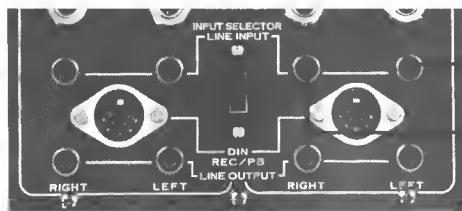
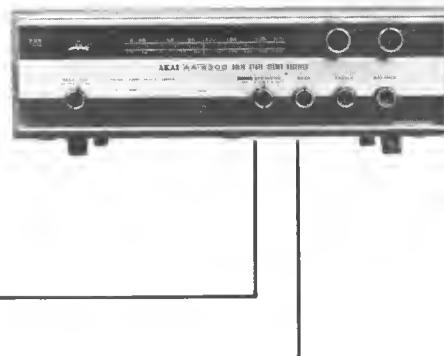
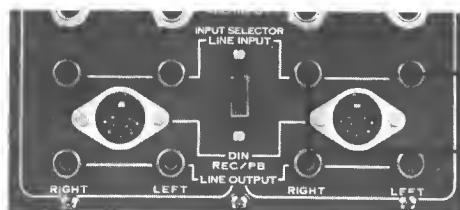


Fig. 22



(From a Record Player)

A Crystal Pick-Up or a Ceramic Pick-Up can be connected directly to the front channel Line Input Jacks instead of Step C of 2-Channel Stereo Recording procedure. If a magnetic cartridge is used, for proper equalization, it must be connected to the Line Input Jacks through an external amplifier.



(From another Tape Recorder)

4-Channel Surround Stereo

For 4-Channel Surround Stereo recording, connect the front and rear Line Outputs of the playback recorder to the front and rear Line Inputs of Model CR-80-SS instead of Step C of 4-channel Surround Stereo Recording procedure.

2-Channel Stereo

For 2-Channel recording, connect the Line Outputs of the playback machine to the Front Channel Line Inputs of Model CR-80-SS (CR-80D-SS) instead of Step C of 2-channel Stereo Recording procedure.

INPUT SELECTOR SWITCH

A Line Input/DIN Selector Switch is provided on the rear panel of Model CR-80-SS (CR-80D-SS). When using Line Inputs, set to upper position. When using DIN Jacks, set to lower position.

Caution:

If this Switch is not properly positioned, your machine will not record.

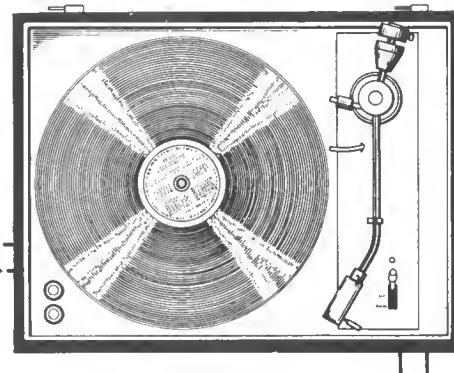


Fig. 23

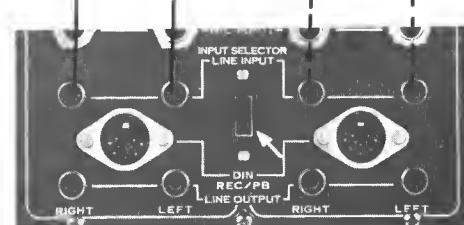
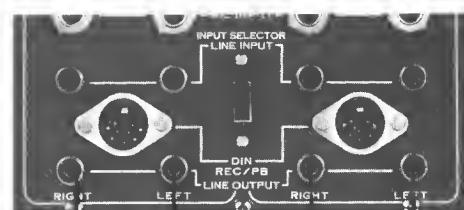


Fig. 24

MONITORING

For monitoring, connect Stereo Headphones to Stereo Headphone Jack. Operate Phone Selector for Front or Rear Channel listening (Front Channel: OUT position; Rear Channel: IN position).

Stereo Headphones should be of 8Ω impedance.

Note:

Cartridge tapes are always equipped with sensing tape for program change-over.

When recording from the beginning of Channel 1 is desired, operate Track Selector Button and set cartridge tape to Channel 2 (4-channel) or Channel 4 (2-channel), and depress Fast Forward Button.

When the next place to which sensing tape is applied is reached (beginning of program 1), the tape will stop automatically. Accordingly, when this operation is completed, recording from beginning of channel 1 can be accomplished.

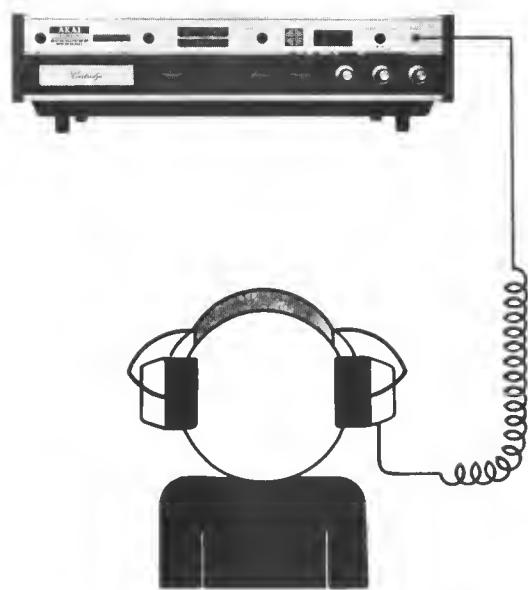


Fig. 25

P.A. SYSTEM (CR-80-SS only)

Your CR-80-SS can easily be converted into a Public Address System. Simply connect Speaker (s) to Speaker Jack(S) and set recorder to recording mode. Microphones are used to activate speaker system. (Left front mic activates left front speaker, etc.).

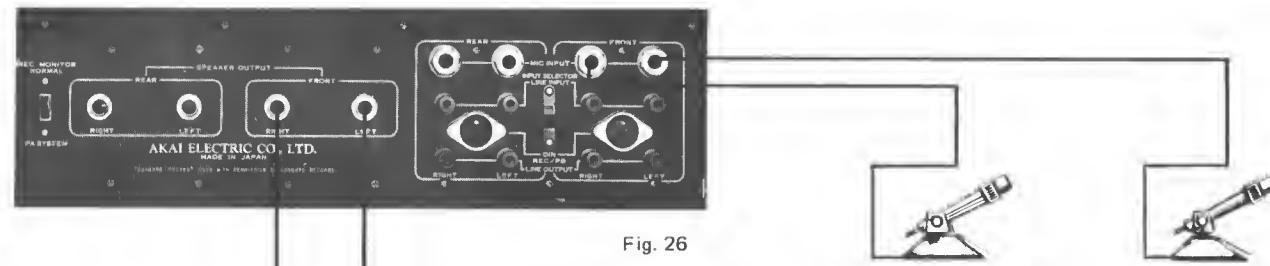


Fig. 26

Important:

When operating Model CR-80-SS as a P.A. System, first set Volume Controls to minimum position and then set Mode Switch on rear panel of recorder to "P.A. System" position. After setting Mode Switch, operate Volume Controls to control volume output.

Caution:

For all other operations, LEAVE MODE SWITCH AT NORMAL (upper) POSITION.

TAPE ERASING

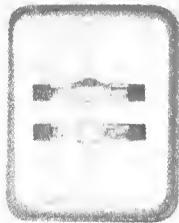
Any signals previously recorded on a tape will be erased automatically as a new recording is being made on the same tape. For erasing only, set recorder to normal recording mode. No plugs should be connected to the recorder Input Jacks and Volume Controls should be kept at minimum position. A Bulk Tape Eraser is recommended for quick and complete erasure.

HEAD CLEANING

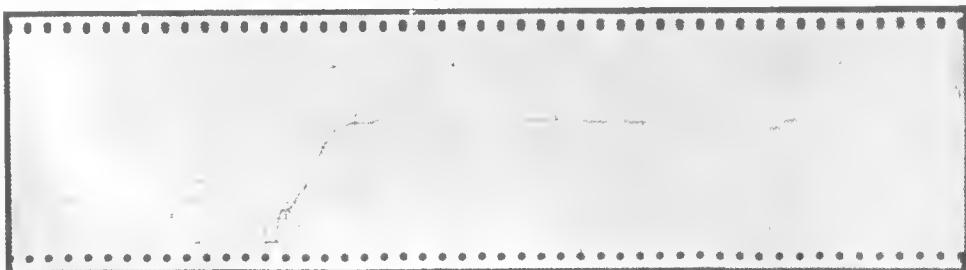
Tape Oxide/Dust deposits cause 90% of Tape Recording Failures. For quality performance, it is imperative that tape recorder heads be kept clean at all times. Dust and magnetic particles from the tape tend to deposit on the heads after prolonged use of the recorder. This results in poor head-to-tape contact deteriorating sound quality and sensitivity. Such

dust deposits cause drastic drops in recording/playback levels and nullifies high quality sound. Make it a rule to clean the heads every time you use your tape recorder.

EXAMPLE



CLEAN HEAD



DUSTY HEAD



Fig. 27

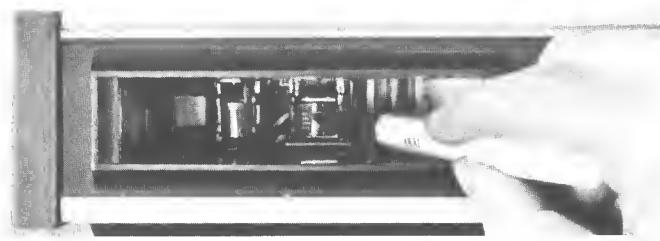


Fig. 28

A Head Cleaning Pen (brush) has been included in the Standard Accessories for cleaning the heads. Clean through cartridge receptacle as shown in Fig. 28.

PLAYBACK (CR-80D-SS)

For Playback with the Model CR-80D-SS, a 4-channel (or two 2-channel) external amplifier and two pairs of speakers are required.

For 4-channel Surround Stereo operation, connect the Line Outputs of Model CR-80D-SS to the Tape Inputs of external

amplifier (right and left front and rear) and connect 4 speakers to the amplifier. Position speakers to form the "2-2 system" as shown in Fig. 29.

For 2-channel operation, only the front channels are used (See Fig. 29).

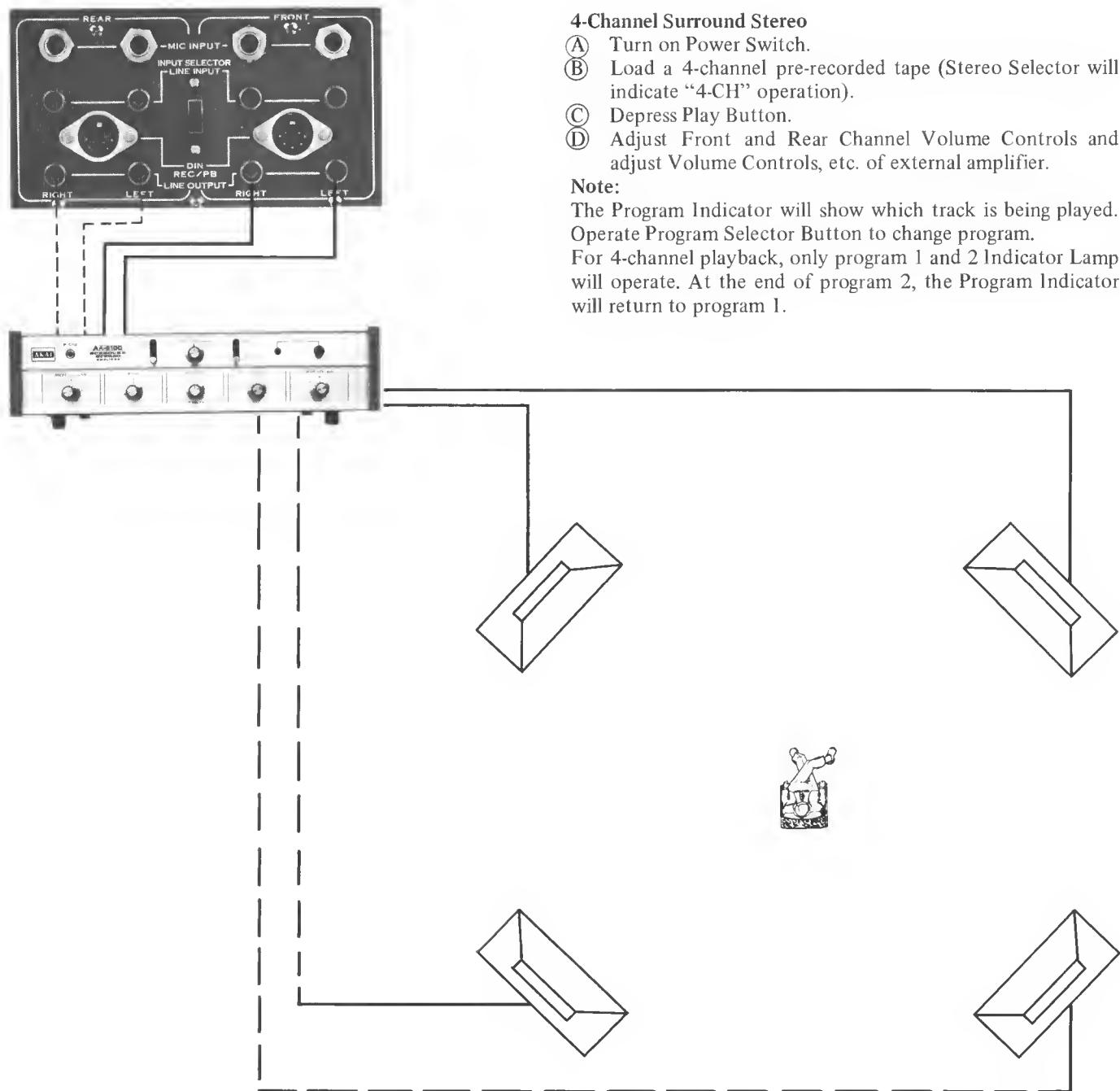


Fig. 29

2-Channel Stereo

For 2-channel stereo, only the front channels are utilized. Substitute the following steps for Steps (B) and (D) of 4-Channel Surround Stereo Procedure.

- B) Load a 2-channel pre-recorded tape (Stereo Selector will indicate "2-CH" operation).
- D) Adjust Front Channel Volume Control and Volume Controls, etc. of external amplifier.

Note:

The Program Indicator will show which track is being played. Operate Program Selector to change program. At the end of each program, subsequent tracks are automatically set for continued playback.

STANDARD ACCESSORIES

CR-80-SS	4-Channel Cartridge Demonstration Tape	1
	Head Cleaning Pen	1
	Spare Fuse	2
	Operator's Manual	1
CR-80D-SS	4-Channel Cartridge Demonstration Tape	1
	Head Cleaning Pen	1
	Spare Fuse	2
	Connection Cord	2
	Operator's Manual	1

OPTIONAL ACCESSORIES

ARC-18



CARTRIDGE PROGRAM
REMOTE CONTROL

ASE-20



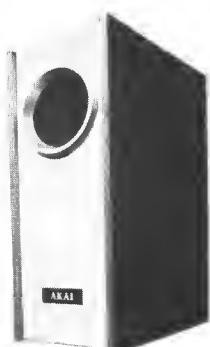
STEREO HEADPHONES

CHC-400



HEAD CLEANING KIT

SW-30



SPEAKER SYSTEM

ADM-12



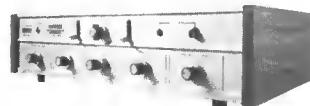
NON-DIRECTIONAL
DYNAMIC MICROPHONE

ASE-22



STEREO HEADPHONES

AA-6100



SURROUND STEREO
PRE/MAIN AMPLIFIER

SW-35



SPEAKER SYSTEM

ACT-200/300



CARTRIDGE TAPES

AA-6300



FM/AM/MULTIPLEX STEREO
TUNER AMPLIFIER

SW-125



SPEAKER SYSTEM

MEMO



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